15. A spin injection device characterized in that:

in a spin injection device comprising a spin injection part having a spin polarization part including a ferromagnetic fixed layer and an injection junction part of a nonmagnetic layer, and

a ferromagnetic free layer provided in contact with said spin injection part, wherein:

said nonmagnetic layer is made of an insulator or a conductor,

a nonmagnetic layer is provided on the surface of said ferromagnetic free layer, and

an electric current flows in the direction perpendicular to the film surface of said spin injection device in order to reverse a magnetization of said ferromagnetic free layer.

16. The spin injection device as set forth in claim 15, characterized in that said ferromagnetic free layer is made of Co or Co alloy, a nonmagnetic layer provided on the surface of said ferromagnetic free layer is a Ru layer, and its film thickness is 0.1-20 nm.

17. A spin injection device, characterized in that:

in a spin injection device comprising a spin injection part having a spin polarization part including a ferromagnetic fixed layer and an injection junction part of a nonmagnetic layer, and

a ferromagnetic free layer provided in contact with said spin injection part, wherein:

said nonmagnetic layer is made of an insulator or a conductor,

a nonmagnetic and a ferromagnetic layers are provided on the surface of said ferromagnetic free layer, and

an electric current flows in the direction perpendicular to the film surface of said spin injection device in order to reverse a magnetization of said ferromagnetic free layer.

18. The spin injection device as set forth in claim 17, characterized in that said ferromagnetic free layer and said ferromagnetic layer are made of Co or Co alloy, a nonmagnetic layer provided on the surface of said ferromagnetic free layer is a Ru layer, and its film thickness is 2-20 nm.

19. The spin injection magnetic apparatus, characterized in that it uses the spin injection device as set forth in any one of said claims **15-18**.

20. The spin injection magnetic memory device, characterized in that it uses the spin injection device as set forth in any one of said claims **15-18**.

21. A magnetic thin film, characterized in that:

it comprises a substrate, and $Co_2Fe_xCr_{1-x}Al$ thin film formed on said substrate, and said $Co_2Fe_xCr_{1-x}Al$ thin film has either of structures $L2_1$, B2, and A2, and in which x is $0 \leqq x \leqq 1$.

22. The magnetic thin film as set forth in claim 21, characterized in that said $Co_2Fe_xCr_{1-x}Al$ thin film is formed without heating said substrate.

23. The magnetic thin film as set forth in claim 21 or claim 22, characterized in that said substrate is either thermally oxidized Si, glass, MgO single crystal, GaAs single crystal, or Al_2O_3 single crystal.

24. The magnetic thin film as set forth in claim 21 or claim 22, characterized in that a buffer layer is provided between said substrate and said $Co_2Fe_xCr_{1-x}Al$ thin film.

25. The magnetic thin film as set forth in claim 21 or claim 22, characterized in that said buffer layer is made of at least either one of Al, Cu, Cr, Fe, Nb, Ni, Ta, and NiFe.

26. A tunnel magnetoresistance effect device, characterized in that:

in the tunnel magnetoresistance effect device having a plurality of ferromagnetic layers on the substrate, at least one of the ferromagnetic layers is $Co_2Fe_xCr_{1-x}Al$ (where $0 \leqq x \leqq 1$) magnetic thin film having either one of structures $L2_1$, B2, and A2.

27. The tunnel magnetoresistance effect device as set forth in claim 26, characterized in that said ferromagnetic layer consists of a fixed and a free layers, and said free layer is $Co_2Fe_xCr_{1-x}Al$ (where $0 \leqq x \leqq 1$) magnetic thin film having either one of structures $L2_1$, B2, and A2.

28. The tunnel magnetoresistance effect device as set forth in claim 26 or claim 27, characterized in that said $Co_2Fe_xCr_{1-x}Al$ thin film is formed without heating said substrate.

29. The tunnel magnetoresistance effect device as set forth in claim 26 or claim 27, characterized in that a buffer layer is provided between said substrate and said $Co_2Fe_xCr_{1-x}Al$ (where $0 \leqq x \leqq 1$) thin film.

30. The tunnel magnetoresistance effect device as set forth in claim 29, characterized in that said substrate is either thermally oxidized Si, glass, MgO single crystal, GaAs single crystal, or Al_2O_3 single crystal.

31. The tunnel magnetoresistance effect device as set forth in claim 29, characterized in that said buffer layer is made of at least either one of Al, Cu, Cr, Fe, Nb, Ni, Ta, and NiFe.

32. A giant magnetoresistance effect device, characterized in that:

in the giant magnetoresistance effect device having a plurality of ferromagnetic layers on a substrate, at least one of the ferromagnetic layers consists of $Co_2Fe_xCr_{1-x}Al$ (where $0 \leqq x \leqq 1$) magnetic thin film having either one of structures $L2_1$, B2, and A2, and has the structure in which electric current flows in the direction perpendicular to film surface.

33. The giant magnetoresistance effect device as set forth in claim 32, characterized in that said ferromagnetic layer consists of a fixed and a free layers, and said free layer is $Co_2Fe_xCr_{1-x}Al$ (where $0 \leqq x \leqq 1$) magnetic thin film having either one of structures $L2_1$, B2, and A2.

34. The giant magnetoresistance effect device as set forth in claim 32 or claim 33, characterized in that said $Co_2Fe_xCr_{1-x}Al$ thin film is formed without heating said substrate.

35. The giant magnetoresistance effect device as set forth in claim 32 or claim 33, characterized in that a buffer layer is provided between said substrate and said $Co_2Fe_xCr_{1-x}Al$ (where $0 \leqq x \leqq 1$) thin film.

36. The giant magnetoresistance effect device as set forth in claim 32 or claim 33, characterized in that said substrate is either thermally oxidized Si, glass, MgO single crystal, GaAs single crystal, or Al_2O_3 single crystal.

37. The giant magnetoresistance effect device as set forth in claim 35, characterized in that said buffer layer is made of at least either one of Al, Cu, Cr, Fe, Nb, Ni, Ta, and NiFe.